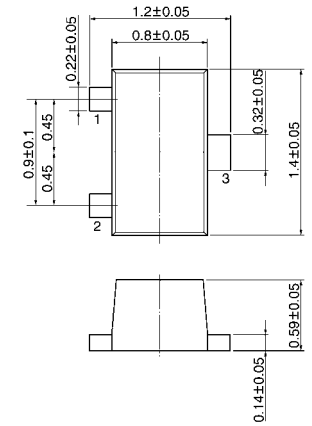
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN1107FT, RN1108FT, RN1109FT

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- High-density mount is possible because of devices housed in very thin TESM packages.
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Wide range of resistor values are available to use in various circuit designs.
- Complementary to RN2107FT~RN2109FT

Unit: mm



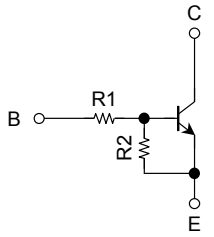
1. BASE
2. EMITTER
3. COLLECTOR

TESM

JEDEC	—
JEITA	—
TOSHIBA	2-1B1A

Weight:0.0022g (typ.)

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN1107FT	10	47
RN1108FT	22	47
RN1109FT	47	22

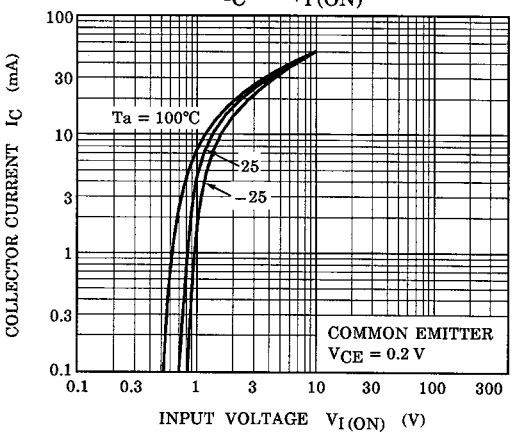
Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN1107FT~1109FT	V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage	RN1107FT	V_{EBO}	6	V
	RN1108FT		7	
	RN1109FT		15	
Collector current	RN1107FT~1109FT	I_C	100	mA
Collector power dissipation		P_C	100	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

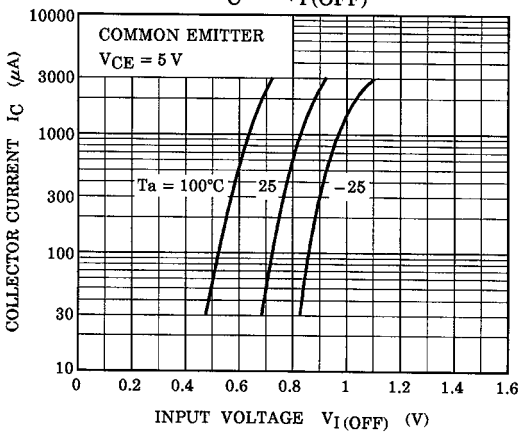
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1107FT~1109FT	I_{CBO}	V_{CB} = 50 V, I_E = 0	—	—	100	nA
		I_{CEO}	V_{CE} = 50 V, I_B = 0	—	—	500	
Emitter cut-off current	RN1107FT	I_{EBO}	V_{EB} = 6 V, I_C = 0	0.081	—	0.15	mA
	RN1108FT		V_{EB} = 7 V, I_C = 0	0.078	—	0.145	
	RN1109FT		V_{EB} = 15 V, I_C = 0	0.167	—	0.311	
DC current gain	RN1107FT	h_{FE}	V_{CE} = 5 V, I_C = 10 mA	80	—	—	
	RN1108FT			80	—	—	
	RN1109FT			70	—	—	
Collector-emitter saturation voltage	RN1107FT~110T9FT	$V_{CE\ (sat)}$	I_C = 5 mA, I_B = 0.25 mA	—	0.1	0.3	V
Input voltage (ON)	RN1107FT	$V_{I\ (ON)}$	V_{CE} = 0.2 V, I_C = 5 mA	0.7	—	1.8	V
	RN1108FT			1.0	—	2.6	
	RN1109FT			2.2	—	5.8	
Input voltage (OFF)	RN1107FT	$V_{I\ (OFF)}$	V_{CE} = 5 V, I_C = 0.1 mA	0.5	—	1.0	V
	RN1108FT			0.6	—	1.16	
	RN1109FT			1.5	—	2.6	
Transition frequency	RN1107FT~1109FT	f_T	V_{CE} = 10 V, I_C = 5 mA	—	250	—	MHz
Collector output capacitance	RN1107FT~1109FT	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	3	6	pF
Input resistor	RN1107FT	R1	—	7	10	13	kΩ
	RN1108FT			15.4	22	28.6	
	RN1109FT			32.9	47	61.1	
Resistor ratio	RN1107FT	R1/R2	—	0.191	0.213	0.232	
	RN1108FT			0.421	0.468	0.515	
	RN1109FT			1.92	2.14	2.35	

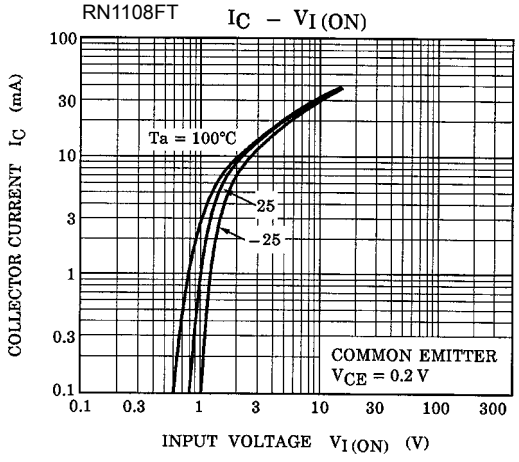
RN1107FT I_C – $V_{I(ON)}$



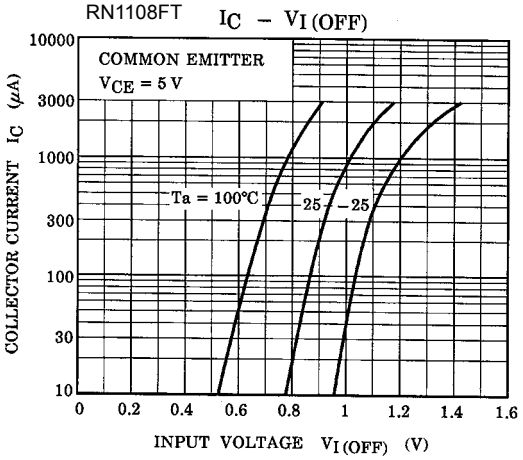
RN1107FT I_C – $V_{I(OFF)}$



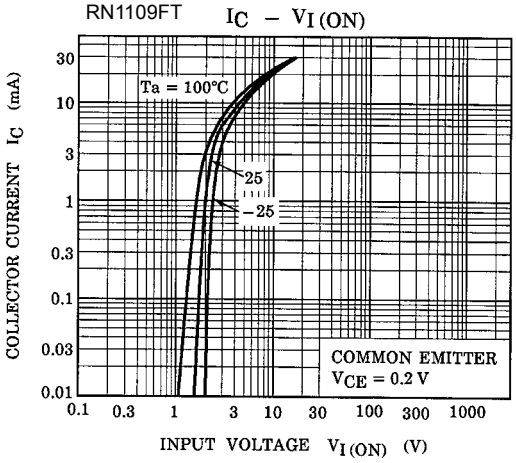
RN1108FT I_C – $V_{I(ON)}$



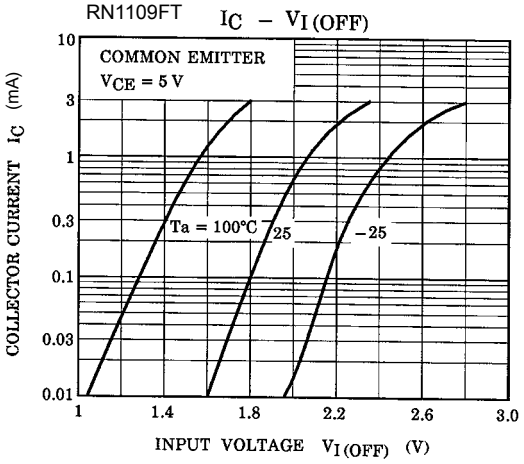
RN1108FT I_C – $V_{I(OFF)}$



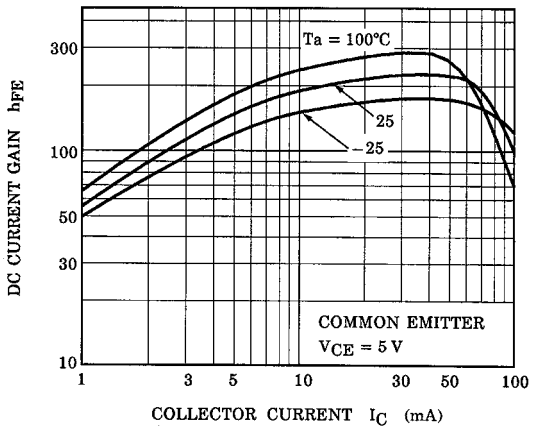
RN1109FT I_C – $V_{I(ON)}$



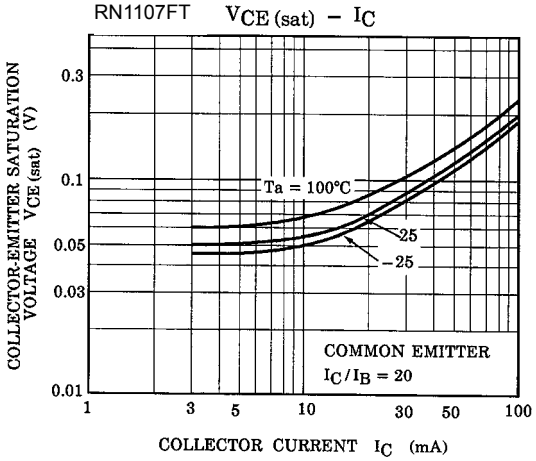
RN1109FT I_C – $V_{I(OFF)}$



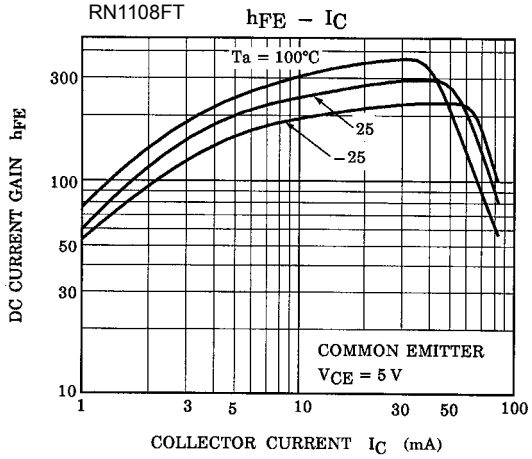
RN1107FT h_{FE} – I_C



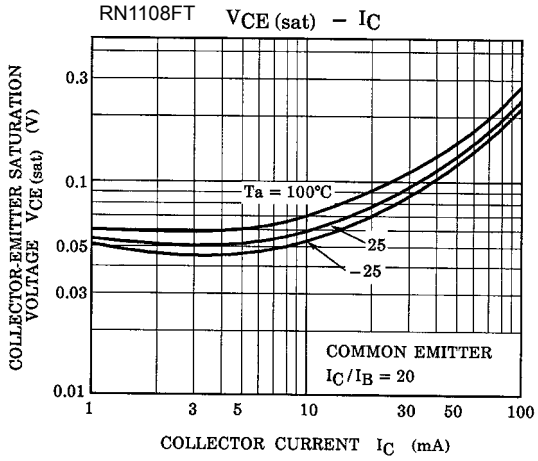
RN1107FT $V_{CE\,(sat)}$ – I_C



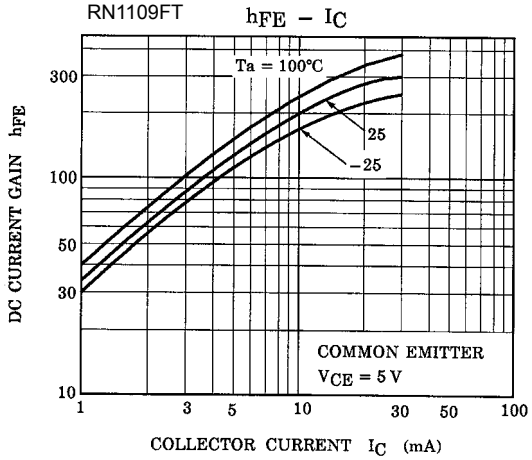
RN1108FT h_{FE} – I_C



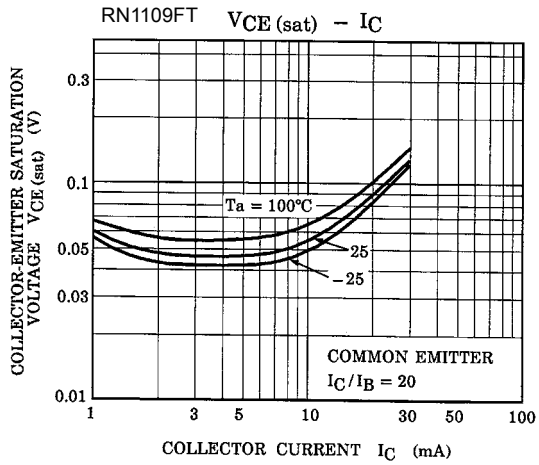
RN1108FT $V_{CE\,(sat)}$ – I_C

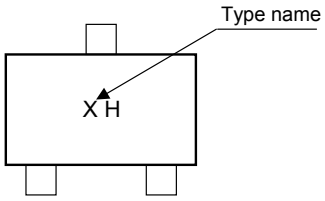
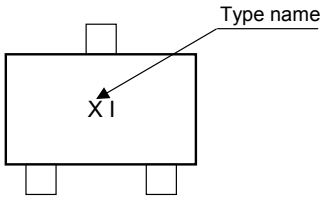
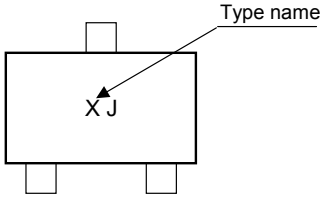


RN1109FT h_{FE} – I_C



RN1109FT $V_{CE\,(sat)}$ – I_C



Type Name	Marking
RN1107FT	
RN1108FT	
RN1109FT	

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